1.0 INTRODUCTION

1.1 Purpose

The purpose of this manual is to set forth the instructions and procedures to provide a useful, up-to-date and accurate data base for the National Highway-Rail Crossing Inventory Data File maintained by the Federal Railroad Administration (FRA) for use by States and railroads.

The procedures for updating the National Highway-Rail Crossing Inventory Data File in this manual are applicable upon completion of the basic inventory, they are to be used for providing data to the FRA and they may be used by States and railroads for maintaining separate files.

This manual is a combination of all previous procedures and update manuals published since 1974 and other instructions periodically prepared.

1.2 Goal

The major goal of the National Highway-Rail Crossing Inventory Program is to provide information to Federal, State, and local governments as well as the railroad industry for the improvement of safety at highway-rail crossings. Good management practices necessitate maintaining the data base on a current basis. The data will continue to be useful only if maintained and updated as inventory changes occur.

The Federal-Aid Highway Act of 1973 (Section 203) required that each State highway agency maintain an inventory of all crossings. According to the implementing instructions contained in the Federal-Aid Policy Guide (FAPG), maintaining the National Inventory will satisfy the legislative requirement for a State inventory (23 CFR Part 924 (a) (1)). A primary purpose of the National Inventory is to provide for the existence of a uniform inventory data base which can be merged with accident files and used to analyze information for planning and implementation of crossing improvement programs by public and private agencies responsible for highway-rail crossing safety.

1.3 Project History

In August, 1972, the U.S. Department of Transportation submitted a report to Congress entitled: Railroad-Highway Safety Part II: Recommendations For Resolving The Problem. The primary goal of this report was to provide recommendations for alternative courses of action which would lead to a significant reduction in accidents, fatalities, personal injuries and property damage at highway-rail crossings.

The report recommended the development of an adequate information system. Although various local, State, and Federal agencies had collected and maintained information about highway-rail crossings, most crossing information systems were fragmented and incomplete.

Certain site-specific information was necessary to provide for a systematic approach to the planning and evaluation of programs for the improvement of highway-rail crossing safety at both the State and Federal level.

The report further recommended that:

- a. The Federal Railroad Administration issue requirements for the railroads to assign and display identification numbers at all highway-rail crossings based upon a uniform national standard to be prescribed by the Department of Transportation. Further, it required FRA to contract with all railroads to provide site-specific inventory data for all crossings on their respective lines, and to annually provide information updating this inventory following inventory standards established jointly by the Federal Highway Administration and the Federal Railroad Administration and working with appropriate railroad and State representatives.
- b. The Federal Railroad Administration expand the current highway-rail crossing accident reporting by the railroads to include <u>all</u> train-involved public and private crossing incidents.

NOTE: The terms "accident" and "incident" are used interchangeably in this manual. The current preferred term for "accidents" is often "collisions" or "crashes."

c. The National Highway Traffic Safety Administration (NHTSA) give early attention and emphasis to implementation of a plan to have all highway-rail crossing accidents reported through a central State agency. Also, NHTSA should require the inclusion of the crossing identification number on the accident report form used by police officers when reporting highway-rail crossing accidents to permit correlation of railroad and police reports with the crossing inventory.

Following the submission of the report, the Federal Railroad Administration assumed principal responsibility for the development of the National Highway-Rail Crossing Information System.

The Federal Railroad Administration entered into a contract with the Association of American Railroads to develop a "Comprehensive National Highway-Rail Crossing

Information and Numbering System." The project was established as a cooperative effort between all the nation's railroads and the U.S. Department of Transportation with the cost of the project to be funded equally by the railroads and the U.S. Department of Transportation.

The railroad companies, with direction and guidance from the Association of American Railroads and the American Short Line Railroad Association, were assigned the responsibility for making a site-specific inventory of each highway-rail crossing and for installing a unique identifying number at each location. The railroads were also identified as being responsible for periodic update of certain inventory information and maintenance of the crossing number.

The State highway departments assisted in the project by providing site-specific highway location and use data. State public utility commissions and other State and local governmental agencies also participated in the project. The responsibility for the updating of certain highway information data items was determined to be through the efforts of these agencies.

1.4 Data Files

There are two types of data files maintained by the FRA. These two data files are the Inventory Data File and the Accident Data File.

The Inventory Data File is a record of grade crossing location, physical, and operational characteristics to provide information for the administration and statistical analysis of crossings. This information is reported to the FRA on the U.S. DOT-AAR Crossing Inventory Form (see Figure 1-1). Each State and railroad is responsible for maintaining its respective inventory file. In order for the files to serve as an effective data base, the States and railroads maintaining their own file should immediately update them. States can maintain the National Data File in lieu of their own file.

The Accident Data File is a record of all train-involved crossing accidents or incidents. The Federal Railroad Administration now requires the reporting of all train-involved crossing accidents and incidents which includes the DOT-AAR Crossing Identification Number. The form used to report all train-involved crossing accidents or incidents is the Highway Grade Crossing Incident Report (see Figure 1-2). Effective 1/1/97, there will be a new version of this form.

Routinely, the highway-rail crossing accident data is integrated with inventory data and the information from the combination is used for the development of Federal programs, funding alternatives for crossing improvement, studies related to railroad safety programs, effectiveness of warning devices, high-speed railroad corridors, accident costs, public awareness and driver training, and other safety program development and research opportunities.

The Federal Railroad Administration's Office of Safety, Highway-Rail Crossing and Trespasser Programs Division, serves as the National Highway-Rail Crossing Information Center. The address is:

Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division
400 7th Street, S.W., (RRS-23)
Washington, D.C. 20590

1.5 Definitions of Highway-Rail Intersections

For the National Crossing Inventory purposes, the following definitions apply for all public, private and pedestrian crossings, with or without crossing signs or active warning devices.

A highway-rail crossing is the intersection (at grade or grade separated) of a roadway (including associated sidewalks and pathways) and one or more railroad tracks. A crossing at a dual or multi-lane roadway is reported as a single crossing. Also, a crossing is reported as a "single crossing" even where there are multiple tracks within the limits of a single set of crossing signs or warning devices and even if the individual tracks belong to more than one railroad company or track owner. (For further discussion of this latter point, see Section 2.3 of this manual.) As a minimum, all at-grade crossings of public and private roads and streets with railroad tracks across are assigned an inventory number if any railroad operations are conducted.

As a general rule, and if no other agreement exists, a crossing that is located (usually equally) on a State, county and/or city boundary line should be considered to be geographically located in the jurisdiction that is South or East of the crossing.

NOTE:

49 CFR Part 234.5(a) provides the following definition:

"Highway-rail grade crossing means a location where a public highway, road, street, or private roadway, including associated sidewalks and pathways, crosses one or more railroad tracks at grade."

For the purposes of the Inventory only, the following definitions apply:

A. Public Crossing.

A public crossing is the location where railroad tracks intersect a roadway which is part of the general system of public streets and highways, and is under the jurisdiction of and maintained by a public authority and open to the general traveling public.

Public crossings can be at-grade or grade separated. If they are at-grade, usually both highway approaches are maintained by a public authority, or the public authority accepts the responsibility for the roadway maintenance. (Highway is a word used here to include highways, streets and roads into a single word.)

NOTE:

23 CFR Part 460.2 provides the following definitions:

"Public road means any road under the jurisdiction of and maintained by a public authority and open to public travel."

"Public authority means a Federal, State, county, town or township, Indian tribe, municipal or other local government or instrumentality thereof, with authority to finance, build, operate or maintain toll or toll-free highway facilities."

"Open to public travel means that the road section is available, except during scheduled periods, extreme weather or emergency conditions, passable by four-wheel standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. Toll plazas of public toll roads are not considered restrictive gates."

"Maintenance means the preservation of the entire highway, including surfaces, shoulders, roadsides, structures, and such traffic control devices as are necessary for its safe and efficient utilization."

1. <u>Discussion.</u>

A crossing shall be classified as public if, and only if, the roadway is deemed a *public road* in accordance with 23 CFR Part 460.2. In

general, a roadway across railroad track for which both approaches are maintained by a public authority and which is open to the public is considered a "public" crossing. These are roadways that are part of the general system of public streets and highways. Some jurisdictions accept a crossing as "public" when only one approach is publicly maintained. If a public authority accepts a crossing as "public," it is a public crossing. All others are considered "private."

Therefore, public crossings are those on roadways which meet the following three conditions:

- a. The roadway is part of the general system of public streets and highways, and
- b. Under the jurisdiction of and maintained by a public authority, and
- c. Open to the general traveling public.

2. Access to Public Facilities.

If the primary function of the road is to provide public access to a publicly owned facility for the principal purpose of on-site use by the public, then the facility may be deemed a logical terminus of a public roadway.

Thus, crossings which exist for the primary purpose of providing public access to publicly owned and operated facilities such as fairgrounds, parks, schools, libraries, hospitals, clinics, airports, bus terminals, beaches, piers, boat launching ramps, recreational facilities, etc., which permit access to or invite use by the general traveling public would satisfy the definition "open to public travel," even if the entrance thereto is equipped with gates to effect seasonal or periodic closures (such as overnight), or limit access, or require an entry fee for use.

3. <u>Determined by Empowerment.</u>

In situations where a State has empowered a public agency (such as the State DOT, State Highway Department, Public Utility Commission, State Commerce Commission, etc.) to make determinations as to whether crossings are public or private, such determinations will govern for Inventory purposes.

B. Private Crossing.

1. Definition.

A private crossing is a highway-rail crossing which is not a public crossing. (A public crossing is defined as the location where railroad tracks intersect a roadway which is under the jurisdiction of and maintained by a public authority and open to public travel. See Par. 1.5.A.)

2. <u>Discussion.</u>

A private crossing is one that is on a private roadway which may connect to part of the general system of public streets and highways but is not maintained by a public authority. Usually, it is a crossing where the property on both sides or at least one side of the railroad tracks is private property. It may also be on a roadway that is publicly owned but which is either restricted or not intended for use by the general public. Private crossings are generally intended for the exclusive use of the adjoining property owner and the property owner's family, employees, agents, patrons and invitees. Crossings are classified as private where the normal need or use is for residential, farm, recreation/cultural, industrial or commercial activities.

Most private crossings exist by virtue of railroad charter provisions, deed covenants, State statute or other prescriptive rights. If none of these apply, the railroad may require an agreement with the private property owner whereby the railroad may install and maintain the crossing proper and any necessary signs or signals at the property owner's expense, and the property owner will assume liability for the crossing and provide coverage via a liability insurance policy.

In some instances, changes in land use have resulted in an expansion of crossing use to the extent that a previously private crossing has some attributes of a public crossing, whether or not any public agency has accepted responsibility for maintenance or control of the use of the roadway over the crossing. The railroad company and highway agency should make every effort to mutually resolve and agree on the appropriate classification (either public or private) of such a questionable crossing.

3. Private Crossings with Public Access.

A private crossing may exist with permitted or limited public access for the primary purpose of providing public access to facilities (either public or privately owned) such as shopping centers, fairgrounds, parks, golf courses, zoos, museums, schools, libraries, hospitals, clinics, airports, bus terminals, beaches, piers, boat ramps, recreational facilities, etc. Such crossings permit access or invite use by the general public, but usually restrict or discourage general public use by requiring permits, or charging admission or other fees to gain entry or use of the facility.

For such crossings, the primary roadway use is to gain entry to the facility. The entrance may even be equipped with gates to effect seasonal or periodic closures. These crossings generally do not qualify as being "open to the general traveling public" and should not be deemed as a public crossing.

Crossings which exist primarily to provide access to publicly owned facilities for "authorized personnel only", such as military bases, ports, equipment yards, maintenance/storage facilities, water or sewerage treatment plants, landfills, levees, service and/or maintenance only entrances, or other facilities, are not normally intended for on-site use by the general public and should be deemed as a private crossing.

4. Private Crossing with No Public Access.

A private crossing with no public access would include, for instance, the crossing within a secured industrial complex or between farm fields where public access to the complex or fields is precluded.

5. Responsibilities.

The railroad should ensure that each crossing is listed in the National Inventory.

C. <u>Pedestrian Crossing</u>.

A pedestrian crossing is a separate designated intersection where pedestrians, but not vehicles, cross a track. Sidewalk crossings contiguous with, or separate but adjacent to, public road crossings, and in the public road right-of-way, are presumed to be part of the public roadway crossing and are <u>not</u> assigned a <u>separate</u> crossing number.

An area where pedestrians trespass is not considered a crossing. The designation of a crossing may be made by a sign, device, or filled materials between the rails.

Pedestrian crossings may also be classified as public pedestrian crossings or private pedestrian crossings, similar to vehicle crossings. The determination is based on whether or not a public agency has jurisdiction over and maintains the sidewalk (or walkway) on either side of the track and whether the crossing is intended for use by the general public. The distinction may be shown on the Inventory Form by inserting "PUB" for public or "PVT" for private in the field for Item 10. - Street or Road Name.

D. Special Situations.

An area where vehicles or pedestrians <u>trespass</u> is not considered a crossing. Vehicles or persons that cross railroad tracks without railroad permission at other than defined crossings are considered trespassers.

Crossings used <u>only</u> by railroads (such as in a railroad yard or terminal) do not need to be reported, but it is best to assign at least one crossing number to the entire location so that a crossing accident, if it occurs, can be properly identified to that location. Also, where multiple private industrial crossings exist within the same restricted-access industrial plant or facility, the railroad should report all such crossings but may report them under a single crossing number. Any accidents, if they occur, would be reported under that single crossing number.

Crossings created to serve specific <u>temporary</u> (six months or less) activities, such as construction sites, do not need to be assigned a crossing number and reported.

E. Open Crossing.

An active or open crossing is one where railroad operations and highway traffic occur or could occur on a regular or irregular basis.

F. Closed Crossing.

A <u>closed</u> crossing is one where the crossing has been physically removed or where railroad operations or highway traffic are <u>not</u> possible.

Examples are where the crossing has been barricaded and highway crossing surface material removed, or where the railroad tracks have been cut or barricaded, physically removed, or a connecting turnout has been removed, or where rail operations are not possible because the railroad tracks are paved over, etc. Crossings along such inactive railroad lines should be reported as closed. (Crossing records reported as closed remain in the National Inventory File for at least five years.)

G. Crossings on Abandoned Track.

Crossings along railroad lines that have been placed in a railroad "abandoned" category, are seasonal in usage, or might be considered temporarily out-ofservice (no railroad operations occur) should remain in an open status as long as track remains in place and there is a reasonable possibility that the line will be used again. This condition may exist even if the particular line is physically separated from the balance of the railroad operating system. For example, if a railroad abandons a line which may very possibly be turned into a commuter line as soon as the appropriate political and financial conditions are resolved, the crossings along the line do not need to be reported as closed in the Inventory. While these crossings remain active and open in the Inventory, the railroad traffic numbers should be reduced to zero in the Inventory until the line becomes active again. The ownership will also probably change to the new property owner. If progress toward reactivating the line does not proceed within a reasonable period of time (about 2 years), then the crossings should be reported as closed and re-opened at a later date using the same crossing numbers. "Rail-banked" crossings, those which may be on-hold by a State or other governmental body for possible future use, would be in this category.

H. Standards and Regulations.

The current Federal regulation that applies to highway-rail crossings is the Code of Federal Regulations, Title 49 CFR Part 234, Grade Crossing Signal System Safety, effective January 1, 1995. This regulation imposes minimum maintenance, inspection and testing standards for highway-rail grade crossing warning systems. This Regulation (Part) also prescribes standards for the reporting of failures of such systems and prescribes minimum actions that railroads must take when such warning systems malfunction. This Part does not restrict a railroad from adopting and enforcing additional or more stringent requirements not inconsistent with this Part. Effective August 19, 1996, FRA amended 49 CFR Part 234 to clarified the Rule as originally published on September 30, 1994.

Additionally, there are Regulations (FHWA) to prescribe policies and procedures for advancing Federal-aid projects involving railroad facilities including projects for elimination of hazards, adjustments required by highway construction, and other financial reimbursement and audit procedures. These are contained in Title 23 CFR Part 646.2, Subpart B - Railroad-Highway Projects. Specifically, Part 646.214 Design refers to the conditions where installations are to include automatic gates with flashing light signals.

Sign and warning device standards are delineated in the Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration. Part VIII of the MUTCD deals with highway-rail crossings.

Also, the Railroad-Highway Grade Crossing Handbook provides general information on the physical and operational conditions of crossings for safe and efficient use by both highway and rail traffic.

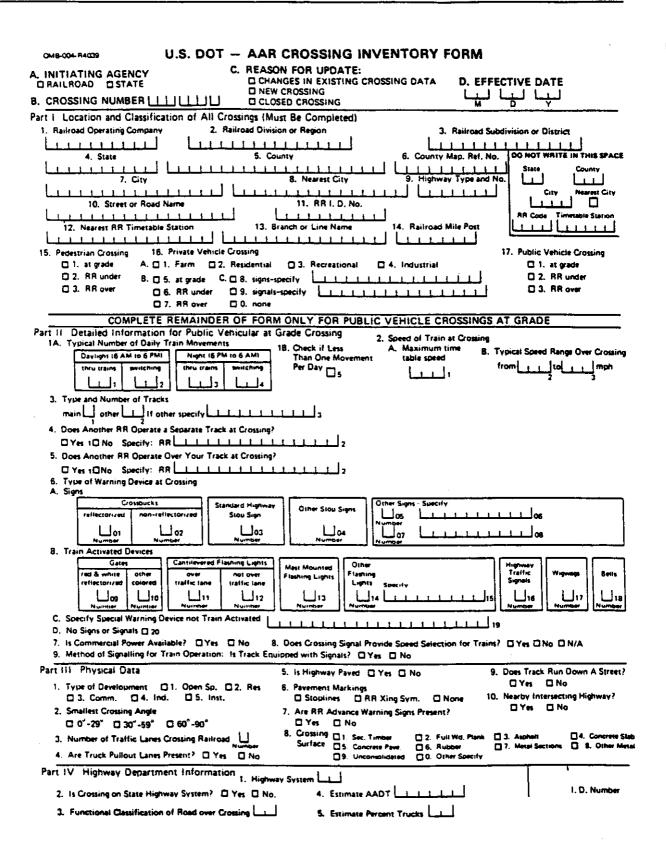


Figure 1-1. U.S. DOT-AAR Crossing Inventory Form

| ARTMENT OF TRANSPORTATION ERAL RAILROAD ADMINISTRATION | | | HIGHWAY GRADE CROSSING INCIDENT REPORT | | | | | FORM APPROVED OMB NO. 04R4033 | | |
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| E OF REPORTING RAILROAD | | | Amtrak Autotrain | 1 | Alphaseis Code | | ···· | 1b. Asiross incident Me. | | |
| OF OTHER MAILROAD INVOLV | ED IN TRAIN INCID | DENT | Autotrain | 2 | s. Alphornic Code | | | 26. Railrand Incident No. | | |
| ING OF RAIL AGAO RESPONSIBLE FOR TRACK MAINTENANCE (simple entry) | | | | | Je Alphelenik Cede | | | Sin Rowald Incident No. | | |
| DOT AAR GRADE CROSSING IDE | NTIFICATION NUM | ABE A | | | DATE OF INCIDENT | | year | S. TIME OF INCIDENT | pm [| |
| LOCA | | | | | FION COUNTY | | * | 8. STATE (two letter cude) | CODE | |
| हेर्न रातृ (म.स.स्थाप) | · | | | . | IT HIGHWAY NAME OF NUN | MER III I | MIGIT CHULME, M | states | | |
| | <u> </u> | | INC | DENT : | RITUATION | | | <u></u> <u></u> | | |
| HIGHWAY USER INVOLVED | | | | | RAILROAD EQUIPMENT INVOLVED | | | | | |
| VPE 2. Truck-Trailer 5. Matercycle Auto 4. Bus 7. Pedestrian Truck 5. School Bus 8. Other repectfy? PEED cetomated mph at impacts 1. North 2. South | | | | COOL | 16. ECUIPMENT 1. Train (units pulling) 1. Train (units pulling) 4. Cartal (muring) 2. Train (units pulling) 5. Cartal (standing) 8. Other (specify) | | | | COOL | |
| | | | 3. East 4. West | CODE | 17 POSITION OF CARIUMIT IN TRAIN | | | | | |
| Sufficial 1. Stalled on crossing | 1. Stalled on 2. Stooped on 3. | | | CODE | | Fraun stri highway | | | | |
| Was the highway user and/or rail | l aquigment involv | ed in the impa | ct transporting hezardou | is materia | Is? 1. Highway user | 2. | Rail equipment | 1. Som 4. New | er Coo | |
| ElePERATURE (specify, if minus) | | | 2) VISIBIL) FY (Hept on | | DNMENT | čoot | ZZ, WEATHER II | unde entri | coc | |
| TEMPERATURE (springs, if minute) | | | 1, 0 2, 0 | 1, Davn 3, Dusk 1, Cle 2, Dav 4, Dark 2, Clo | | | ar 3. Rain 5. Sleet | | | |
| TYPE OF TRAIN | | | T1 | RAIN A | ND TRACK | CODE | 14 7846- 706 | E USED BY TRAIN INVOLVED | cor | |
| 1, Freight 2. Passenger | 9. Yard/Switching 6. Light Locomotive(s) 26. FRA TRACK CLASSIFICATION | | | | 1. Ma 2. Ya | on 3. Siding | | | | |
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| NUMBER OF CARS | 25 TRAIN SPEED INTO AND SPITAL | | MPH Recorded | | T, No | NOTES 3. East Source 4. West | | | | |
| | | | C | ROSSIN | G WARNING | | ··· | | | |
| TYPE | Gaues | ٩ | Hwy, Traffic Signals | 9 W | stchmen | | 32. SIGNALED | CROSSING WARNING | | |
| (place X in 2 Cantilever FLS 6 | | | Audible 1 | Flagged by crew | | | Was the signaled crossing warning identified in item 31 operating? | | | |
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| VIEW OF TRACK ORSCURED BY | Standing railroad | | 3. Passing train 4. Topography | 5. Vogs | tetion 7. Other nay valueles 8. Not of | | | | ١ | |
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| Permanent structure Z. | | r demage) | 1 | 9 14 | inend 3 University | 1 | | | | |
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| Permanent structure RESERVE PROPERTY TOTAL HUMBER OF OCCUPANT | DAMAGE (FI). shelin | | 1. KHING | OF OCCU | PARTS INJURED | | 46. TOTAL N | 1. Yes 2. No | | |

Figure 1-2. Highway Grade Crossing Incident Report